

factors, taking *Polygyra* as the most dominant and characteristic genus in eastern North America, it will be seen that in undisturbed localities the large *Mesodon* type is quite as abundant and conspicuous as either the medium sized *Triodopsis* type (in the old sense) or the relatively small *Stenotrema*. When the balance is upset by some factors such as fires the latter two types are favored while the first is distinctly reduced in numbers. The truth of that is readily seen at Asheville where the large mesodons are reduced to a point where they barely maintain themselves.

JAMAICAN LAND SNAILS, 3

BY H. BURRINGTON BAKER

(Plate 3)

The first paper of this series appeared in the July number; the symbols used are explained on pages 7 to 9.

Geomelania minor densecostata new subspecies. Fig. 5.

With growth threads on later whorls finer and more closely crowded (51 on last); peristome quite evenly rounded or with marked baso-palatal point (type intermediate). Alt. (of type) 7.56 mm., diam. 3.17 mm., alt. last whorl 4.14 mm., alt. apert. 2.49 mm., diam. apert. 2.03 mm., with $5\frac{3}{4}$ whorls remaining (+ about $6\frac{1}{2}$). Type locality (ANSP. 163726): MN2, in a sink-hole.

G. (*Scalatella*) *striosa pumila* new subspecies. Fig. 6.

Smaller, with relatively more widely spaced growth threads (14 on penult, 16 on last whorl); with about 30 wavy spiral ridgelets becoming more obscure towards base on last whorl; baso-palatal point weak and rounded. Alt. (of type) 6.04 mm., diam. 1.57 mm., alt. last whorl 2.23 mm., alt. apert. 1.22 mm., diam. apert. .88 mm., with almost 7 whorls remaining. Type locality (ANSP. 163727): EEJb.

Veronicella leptothali new species. Figs. 2 to 4.

Notum (in alcohol) ochre with indistinct gray dots except in mid-dorsal light stripe, and with darker spots arranged to form an irregular, wide-meshed network. Hyponotum lighter than notum but darker than sole, with fine darker dots usually becoming more evident towards posterior end. Anus evident. Notal length (of type) 40.5 mm., width 44 (17.7 mm.), sole width 15

(6.1 mm.); female opening from anterior end 51 (20.6 mm.), from sole 29, querindex 3.4 (2.4 mm.); dimensions of another (WWC; fig. 4) 54.5, 37 (20.1), 9 (5.1); 53 (29.0), 27, 3.7 (2.3).

Spermatheca (fig. 2) with shorter stalk than in *V. laevis*, developing when fully mature, just below entrance of canalis junctor into its walls, a subspherical, thick-walled diverticulum. Verge (figs. 3, 4) small and slender (contracted in type) with relatively large, chalky-white glans. Dart papilla acuminate with slightly enlarged apex; glands consisting of 9 central, slender, simple tubules and of two larger ones, each of which immediately bifurcates and then rapidly and irregularly subdivides to form 9 and 11 (20 in all) stouter and longer tubules (3 times length of others and longer than entire animal; only bases shown in fig.) Penial retractor bifurcate near base of verge, arising as three strands at left of heart and over origin of right ocular muscle. Pedal nerves divergent abruptly near level of anterior heart margin.

Type locality: MN3. *V. leptothali* is smaller than *V. laevis*, has a relatively much slenderer penis and, when fully mature, develops a small sac near the base of the spermathecal stalk (very different from the large, thin-walled, vaginal bursa of *Leidyula*).

V. (*Leidyula*) *kraussii trichroma* new subspecies.

Dorsum with coarser papillae; anterior fourth chestnut-brown with white spots, especially towards mid-line, followed by broad, transverse white band (flesh-colored in alcohol) and posterior 3/5 inky black with a few brownish spots; tentacles brownish; hyponotum much as in *kraussii*. Immature, but with verge apparently similar to *kraussii*. Dimensions of type: 35.7, 50 (17.8), 19 (6.7); 52 (18.4), 23, 4.3 (1.5).

Type locality: VW2. This may be only a color form of *kraussii*, but is so very distinct that I suspect it to be a new species.

***Allopeas*, new subgenus of *Lamellaxis* Strebel & Pfeffer.**

Type *Lamellaxis gracilis* (Hutton), to include species of *Lamellaxis* with elongate radular marginals which retain tricuspid fascies, with better developed accessory penial caecum than in *Leptopeas* and *Lamellaxis* s.s., with relatively simple straight columella, and without distinctly colored shell cuticle. Essentially *Opeas* s.s. of the Man. Conch., vol. 18; possibly a section of either *Tomopeas* or *Comoropeas* Pils. Anatomy of *Lamellaxis* fundamentally similar to that of *Pseudopeas*, while *Opeas* (type "*Stenogyra goodalli* Miller"), *Neosubulina* and *Ochrodermella* belong in the Ferussaciinae.

Varicella (Varicellaria) necrodes, new name for *Achatina procera* C. B. A.

(1849. Cont. Conch. 2: 24); not *Bulimus procerus* C.B.A. (1845, Proc. Boston Soc. Nat. Hist. 2: 13) = *V. (Sigmataxis) procera* (C.B.A.). Whitish even when fresh.

V. (Sigmataxis) paupercula tumens new subspecies. Fig. 7.

Opulent race with more whorls (attains $8\frac{3}{4}$ with alt. 13.8 mm.; MN2) and much vaguer varices (little darker than amber colored interstices); major growth lines usually weak and widely spaced on last 3 or 4 whorls. Alt. (of type) 12.68 mm., diam. 26 (3.27 mm.), alt. last wh. 43 (5.51 mm.), alt. apert. 25 (3.18 mm.), diam. apert. 52 (1.66 mm.); $8\frac{1}{2}$ whorls.

Type locality (ANSP. 163822): MN3c. This variety differs from the paedogenetoid *V. paupercula* much like *perplexa* does from *V. laeviusculus*.

V. (S.) cylindrica new species. Fig. 9.

Shell thin, translucent; color amber, paler at apex, with light chestnut varices. Embryonic whorls rapidly increasing. Later whorls becoming flat-sided, with widely spaced, major growth-lines (sometimes more closely spaced on antepenult or preceding whorl), becoming very weak on last whorl, which usually shows spiral corrosion lines; suture lightly impressed. Long axis of aperture 30° to that of shell; peristome almost vertical but arcuate. Alt. (of type) 8.02 mm., diam. 26 (2.09 mm.), alt. last wh. 57 (4.60 mm.), alt. apert. 31 (2.47 mm.), diam. apert. 50 (1.24 mm.); $6\frac{3}{4}$ whorls, but attains 8 (EJ1, broken).

Type locality (ANSP. 163823): EJF. *V. cylindrica* is nearest *V. laeviusculus* and its affluent form *perplexa*, but has a larger apex.

V. (S.) subaquila new species. Fig. 8.

Shell small and slender with uniform, deeply impressed, well-spaced growth-lines (25 on last wh.); color dark golden with rather vague, broad, brownish varices. Whorls 7, fairly curvilinear, lightly shouldered below suture, which is deeply impressed. Long axis of aperture about 30° to that of shell; peristome 20° , weakly arcuate. Alt. (of type) 5.62 mm., diam. 24 (1.33 mm.), alt. last wh. 48 (2.72 mm.), alt. apert. 24 (1.37 mm.), diam. apert. 55 (.76 mm.); 7 whorls.

Type locality (ANSP. 163824): VWS. *V. subaquila* is nearest *V. parallela* (Pils.) but is darker, potentially smaller, with apical whorls relatively longer and with later ones more gradually lengthened.

Poteria jamaicensis (Wood, limited by Swby.) [KF, MM, MN, NM2; diam. 20.9 to 28.7 mm., intergrading with f. *novus-saltus* (Ch.) in MM4 and paedogenetoid, approaching *crassa* (C.B.A.) in exposed places]; *P. cycloata* (Ch.), which has weaker growth-striae on its earlier whorls than in paedogenetoid *jamaicensis*, including typical [WW], shells with umbilical carina and coarser wrinkles obsolescent [WC] and one *crassa*-like shell [VW1-fresh]; *P. densestigmata* (Ch.), paedogenetoid race [EE; diam. 20.7 to 25.4 mm., umbilical carina, pits and coarser sculpture often weaker; opercular lamella with almost smooth buttress, on last whorl widening at upper end and becoming rudely striate so as to finally form an upper lamella almost as broad as chondroid whorl]; *P. seminuda* (C.B.A.), quite typical [MN3b, NMM] and an extremely variable series [NM1, 2; usually with flatter operculum (one has failed to develop the heavy buttresses which leaves lamella similar to that in my *densestigmata*), shell depressed to globose, often with strongly sinuate peristome]; approaching subsp. *rubra* (Ch.) [NMV; usually depressed, entire surface diamond-cut or zigzag-wrinkled]; approaching subsp. *bairdiana* (Ch.) [NMT; globose-conic, diam. 24.5 mm.; opercular whorls rapidly increasing so that last is very broad; nearer *rudisplanusque* Ch., but that name violates the Code.]

P. notatior (Ch.), large race (= *corrugatus* Ch., not Swb.) [MN3; one reddish shell, more heavily wrinkled than *corrugator* and with opercular lamella more "reflected" and more closely whorled than *jamaicensis*]; *P. varians* (C.B.A.), which is well named; subsp. *portlandensis* (Ch.), including typical race [EJ3; upper opercular lamella often irregularly eroded (acid humus) and incomplete], heavier and higher shells [EJ2, EJF] and paedogenetoid race [ENF in hills; diam. 19.7 to 21.5 mm., with *varians* operculum and intergrading shell-sculpture]; subsp. *varians* (C.B.A.), typical (*i.e.*, no. 6 of Adams, now chosen as type because his lot 5 contains no adult with an operculum), often with whitish bands and intergrading with smoother, reddish shells [KF-fresh, KHS-fresh, KHW]; subsp. (or race) *campeachyi* H.B.B. [KCC]; subsp. *corrugator* (Ch.), including smoother shells approaching typical *varians* [MM3, MN3] but more with heavier and earlier wrinkles [ML, MN1, 3, MN3],

gemma (Ch.), a paedogenetoid race [ML2, on a dry hillside] and approaching subsp. *zigzag* (Ch.) but usually smoother below periphery [VCMb, d].

P. novae-spei (Ch.) [WC2, WWC; opercular lamella almost vertical, slightly spreading and scarcely "reflected," but beveled internally near its upper end so as to present an inclined to almost horizontal, coarsely striate surface, somewhat similar to that of *pallescens* (C.B.A.)]; *P. rupis-fontis* (Ch.), smallish stock [WWF; max. diam. 23.5 mm.; opercular lamella with striated internal bevel very steeply inclined]; *P. westmorelandensis* (Ch.) [WC1; one female, shell with close, wavy growth-ridges and almost no trace of coarser sculpture, but with operculum and umbilical carina like *corrugata*]; *P. corrugata* (Swby.; not of Pfr. or Ch.), quite exactly matching type figure [WSF; with opercular lamella more incurved than in *jugosa* and completely hiding striated inner surface]; subsp. *striosa* (Ch.), a very marked paedogenetoid race [VWS; with opercular lamella even more incurved]; subsp. *jugosa* (C.B.A.), including typical [VW2] and race *parva* (Ch.) [VW1].

P. (Crocidopoma) suturalis (Swby.) [NM1, 2, NMM; males and females not noticeably differing in size]; *P. dubiosa* (C.B.A.) [VCMb, d, VF, VWS; all the 23 animals examined are females!]. The epidermal fringes which characterize the operculum of *Crocidopoma* are usually worn away from fully mature individuals.

Geomelania jamaicensis Pfr. (+ *affinis* C.B.A.), intergrading with f. *expansa* C.B.A. [WWF]; *G. gracilis* C.B.A. (+ *peilei* Dean) [VW1, 2]; subsp. *media* C.B.A. [WSF]; subsp. *parva* C.B.A. [VWS; much more distinct than *media*!]; *G. hilliana* C.B.A. [VCMb; type not seen; mine look like *minor* but smaller and more slender, with point on lower palatal lip often lacking]; *G. minor* C.B.A., incl. quite typical [ML2, MM3c, MN3ab, NM2c, VW2; sometimes with lip like *vicina*] and smaller race [VW1]; subsp. *densecostata* H.B.B., incl. typical [MM4, MN1, 2, 3ac] and one smaller shell [NM1]; *G. vicina* C.B.A. [MM2, 3bc, NM2a, also KHW? (broken subfossil); sometimes with lip like *minor* but with heavier ribs, as wide or wider than interspaces on last whorl and even more noticeably heavier but more widely spaced on

earlier whorls]; *G. pyramidata* C.B.A. [NMV? immature; type not seen]. All my species of *Geomelania* occur in rather open woods like on hill-tops, aestivate under quite clean rocks and are weak although prompt climbers on rock-faces.

G. (Scalatella) beardseana (C.B.A.) [KHWa; very variable in size, with 22 to 32 ribs on last whorl]; *G. striosa* C.B.A. [EJF; 21 ribs on last whorl; type not seen]; subsp. *pumila* H.B.B. [EEJb]; *G. elegans* C.B.A. [ENF]; *G. inornata* Ch. [?EEJ, 1.5 × 5 mm., 5½ wh., 35 threads on last whorl, with numerous fine spirals, lower palatal lip slightly produced; ?VWS, worn shell, 1.5 × 6 mm., 6 wh., with larger whorls and 40 low threads on last; type not seen, and Chitty's dimensions seem improbable]; *G. pygmaea* (C.B.A.), incl. quite typical [KF, ML2] and appr. *microglypta* Pils. & Br. [MN3ac].

G. (Chittia) sinuosa Ch. [VCMb].

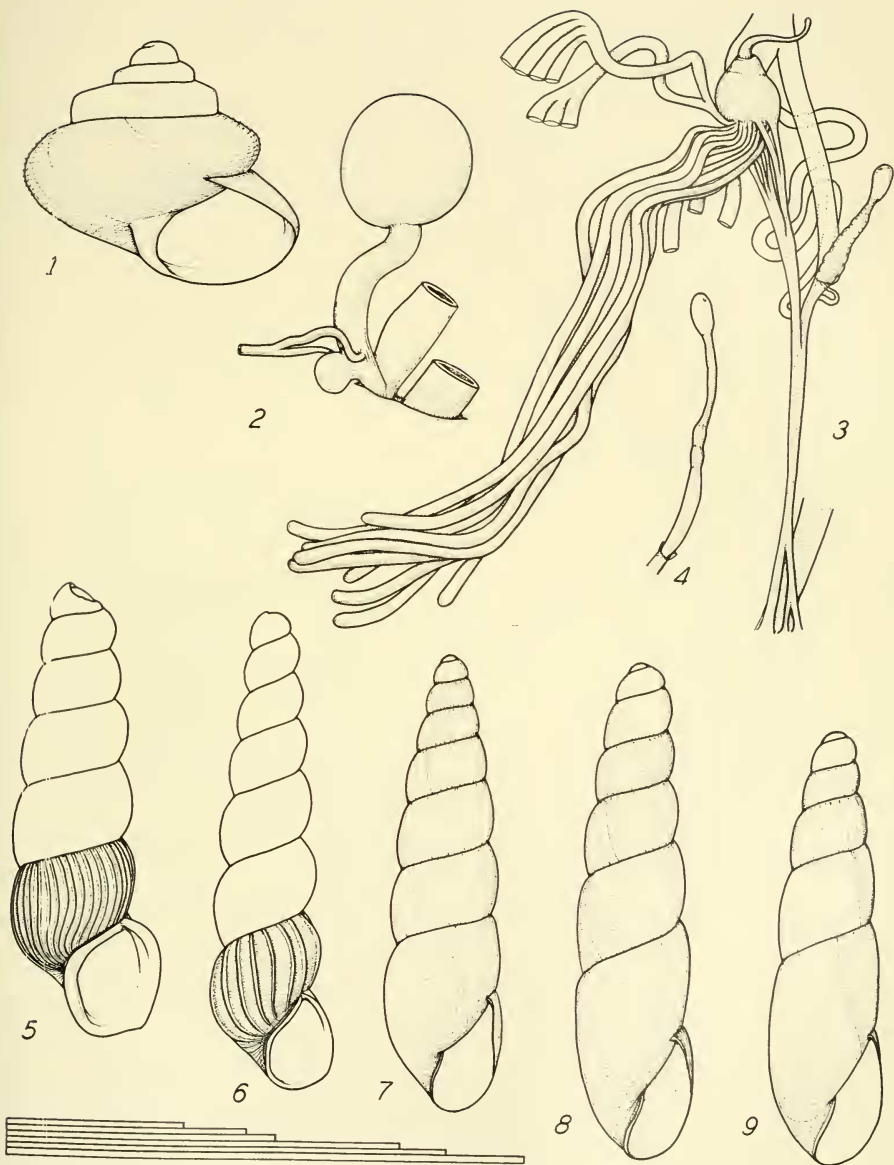
Veronicella laevis Blainv. [= *sloanii* (Cuv.)?], good nocturnal climber, often found in axils of banana leaves during daytime; the commonest species in culture [EEC (young, *schivelyae* color), EJ2, EJF (young, *schivelyae* color), KHS, MM1, 3 (incl. *schivelyae* young), MM4, MN3; attaining length of 85 mm. contracted, over 110 mm. when alive]; *V. leptothali* H.B.B., ground and under rocks in woods [KHW, MM4, MN2, 3, WWC, WWF-young].

V. (Leidyula) floridana (Leidy), ground near cultivation [MM4, MN3, VCM, VW1, WWC]; *V. kraussii* (Fér.) (+ *jamaicensis* Ckll.), ground and under rocks in woods, incl. typical [EEJ, EJ3, MM3, MN3, NMV, VCMb; usually without longitudinal stripes] and color-form (?) *trichroma* H.B.B. [VW2].

Carychium jamaicense Pils. [= *jardineanum* (Ch.)?], ground [EJF, KF, VCMb].

Pupisoma dioscoricola (C.B.A.), leaf-arboreal [EEC, MM2-fresh, 3, MN3-fresh, VCMb]; *Bothriopupa tenuidens* (C.B.A.), leaf-arboreal (EEC, EJ2, EJF).

Plate 3. Drawn with aid of camera lucida. Scales indicate 5 mm. and, from top to bottom, are for fig. 7, figs. 2-5, fig. 9, fig. 6, fig. 8, and fig. 1, respectively.



1. *Stoastomops adamsi*. 2-4. *Veronicella leptothali*. 5. *Geomelania minor densecostata*. 6. *G. striosa pumila*. 7. *Varicella paupercula tumens*. 8. *V. subaquila*. 9. *V. cylindrica*.